

## Activity 1

### Think About It

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Classify each item below as having kinetic or potential energy:

- rock balanced on cliff
- landslide
- roller-coaster car
- diver on 10-m platform
- tides



# WHAT DO YOU THINK?

## Activity 1

### Investigate Part A

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#### Station 1

1a. Describe what happens to the temperature of your hand.

1b. Describe and explain the change in temperature of your hand.

1c. Compare and explain the temperature difference of your hand.

#### Station 2

1a. Will a metal or Styrofoam cup keep the water hot for a longer period of time?

2a. Record your design.

3a. Which one feels hotter? Explain.

#### Station 3

1a. What differences do

You expect in the temperature inside the two solar cookers over time?

2a. Data table.

<b>Time (min)</b>	<b>Standard Cooker (°C)</b>	<b>Insulated Cooker (°C)</b>
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

3a. Record and graph the data.

4a. How did your results compare with your hypothesis?

4b. What heating mechanism causes the cookers to heat up in the first place?

4c. What are the different heat transfer mechanisms that are taking place in the cookers? Use diagrams.

4d. What mechanism keeps the heat from escaping?

4e. What improvements could be made to the cooker?

## Activity 1

### Digging Deeper

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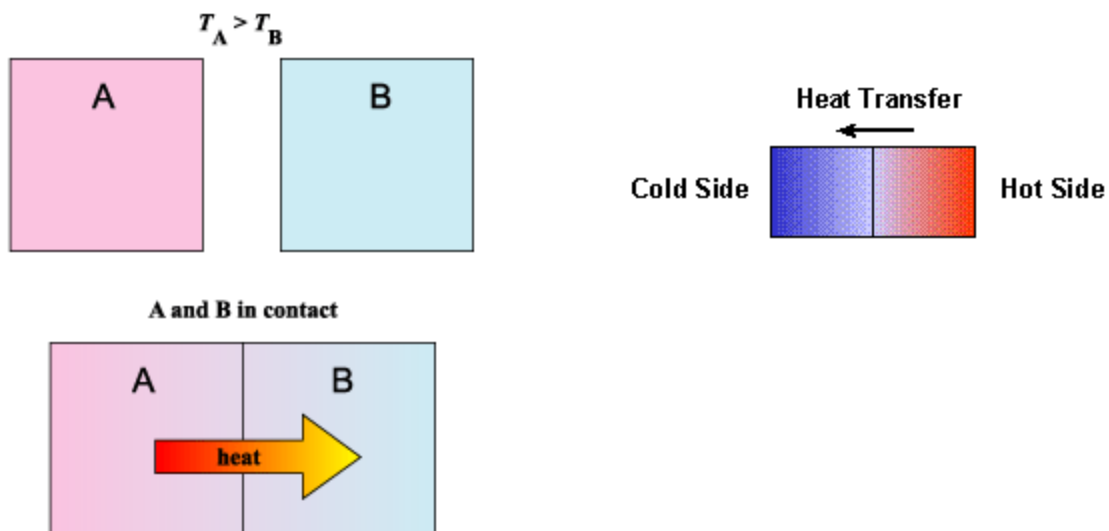
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### Heat

thermal energy that is transferred from one object to another

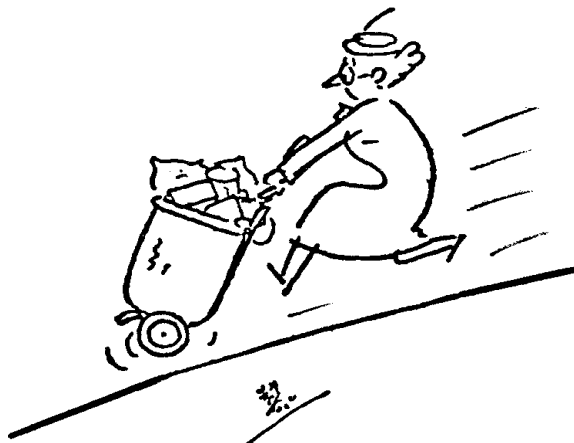
Heat moves from hotter places to colder places



### Kinetic energy

energy an object has due to its motion

If an object is not moving, it doesn't have kinetic energy!!!

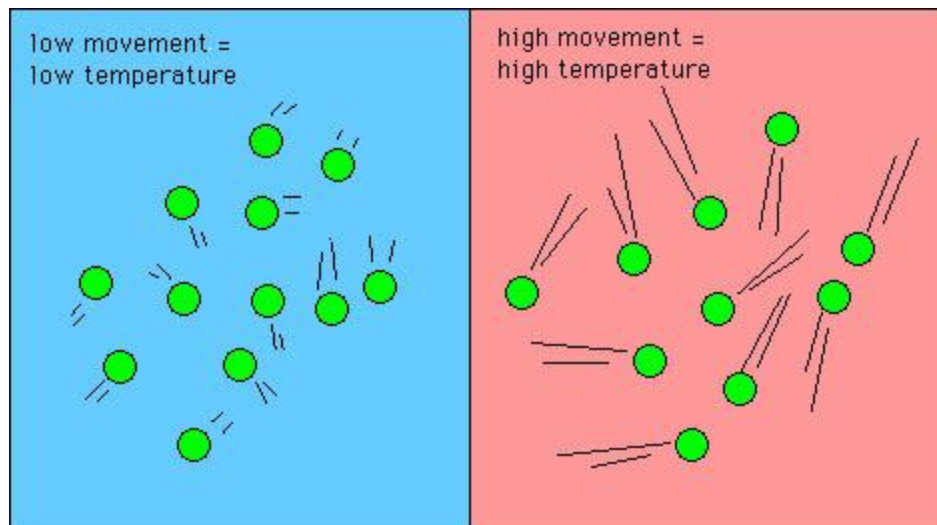


## Temperature

a measure of the kinetic energy of molecules in motion

In other words, it is a measure of how hot or cold something is

The more kinetic energy molecules have, the higher the temperature



Heat transfer

when heat is transferred, energy always moves from warmer objects to cooler objects

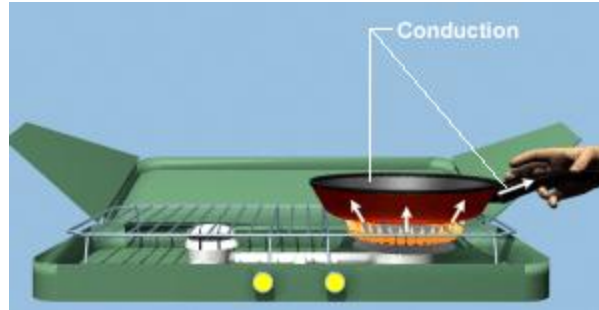
3 types of heat transfer

1. conduction
2. convection
3. electromagnetic radiation

## Conduction

heat transfer by direct contact

It occurs when the particles in a material collide with neighboring particles



<http://www.absorblearning.com/media/attachment.action?quick=ae&att=740>

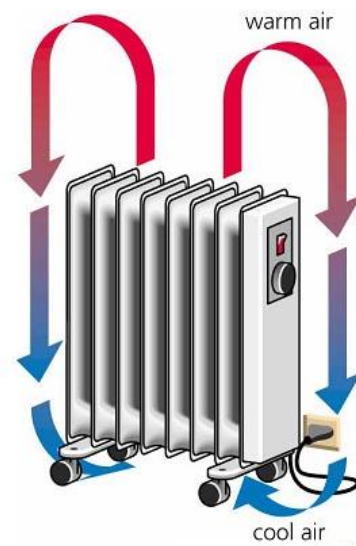
## **Convection**

the transfer of heat by the flow of material due to density differences

When a liquid or gas is warmed, it becomes less dense and rises

When a liquid or gas is cooled, it becomes more dense and sinks

Cooler, denser material sinks while warmer, less dense material rises, forming a convection current

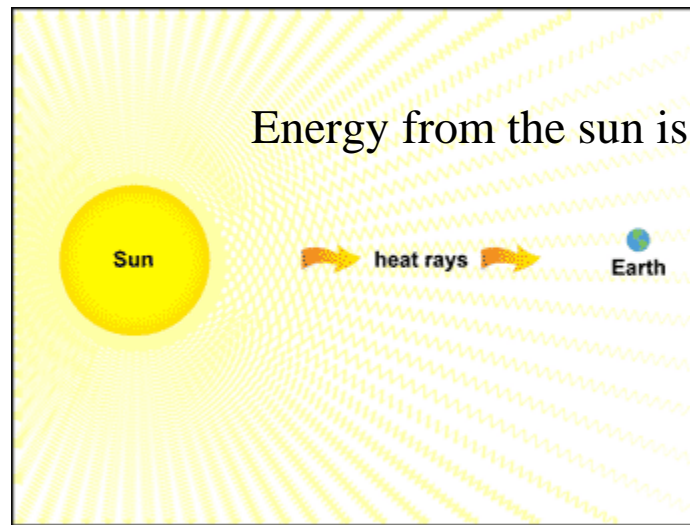


<http://www.yenka.com/freecontent/attachment.action?quick=an&att=758>

<http://www.yenka.com/freecontent/attachment.action?quick=af&att=742>

## **Electromagnetic radiation**

the transfer of heat by waves or rays



Energy from the sun is transferred to Earth by r

[http://www.wisc-online.com/objects/index\\_tj.asp?objID=SCE304](http://www.wisc-online.com/objects/index_tj.asp?objID=SCE304)

Examples

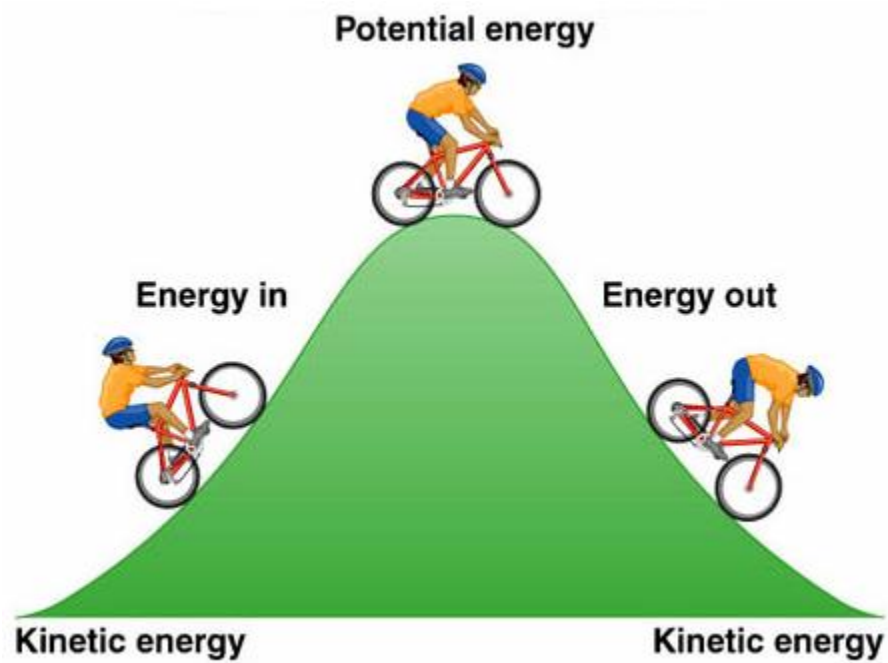
- radio and television waves
- visible light
- ultraviolet waves
- X-rays

## **Potential energy**

the energy stored in an object because of its position

It is stored energy

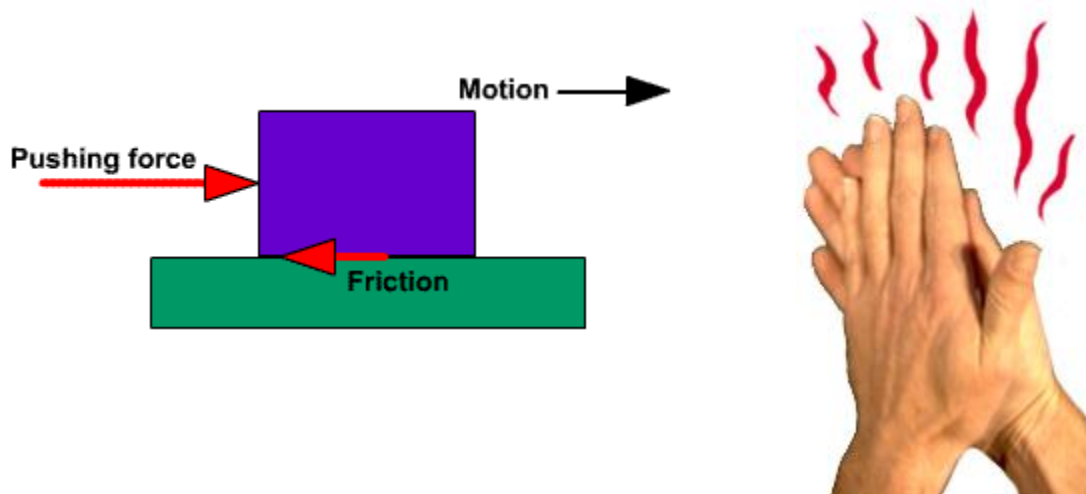




## Friction

a force that resists motion

Nothing on Earth is completely frictionless



## Activity 3

### Check Your Understanding

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1. How is kinetic energy different from potential energy?

2. Name and describe the three types of heat transfer.